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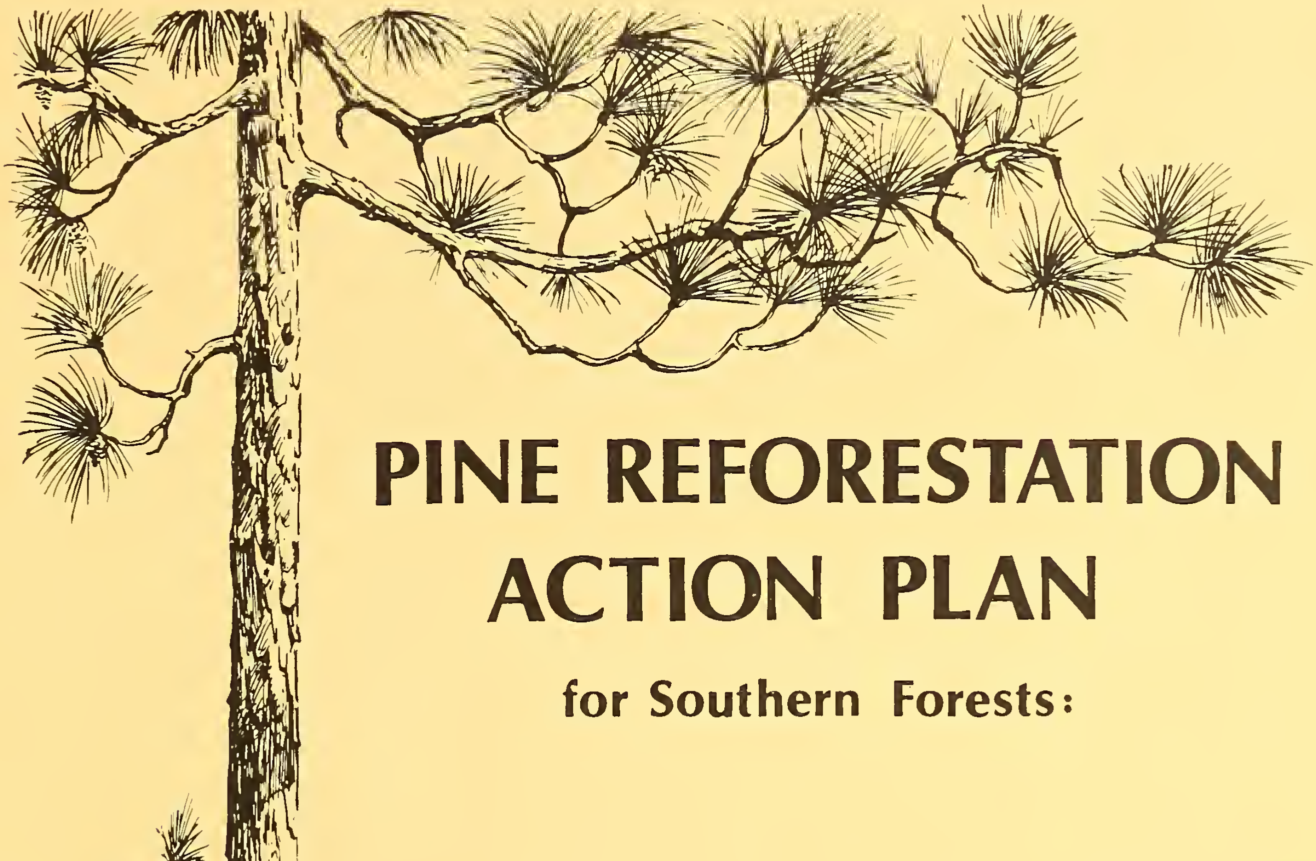
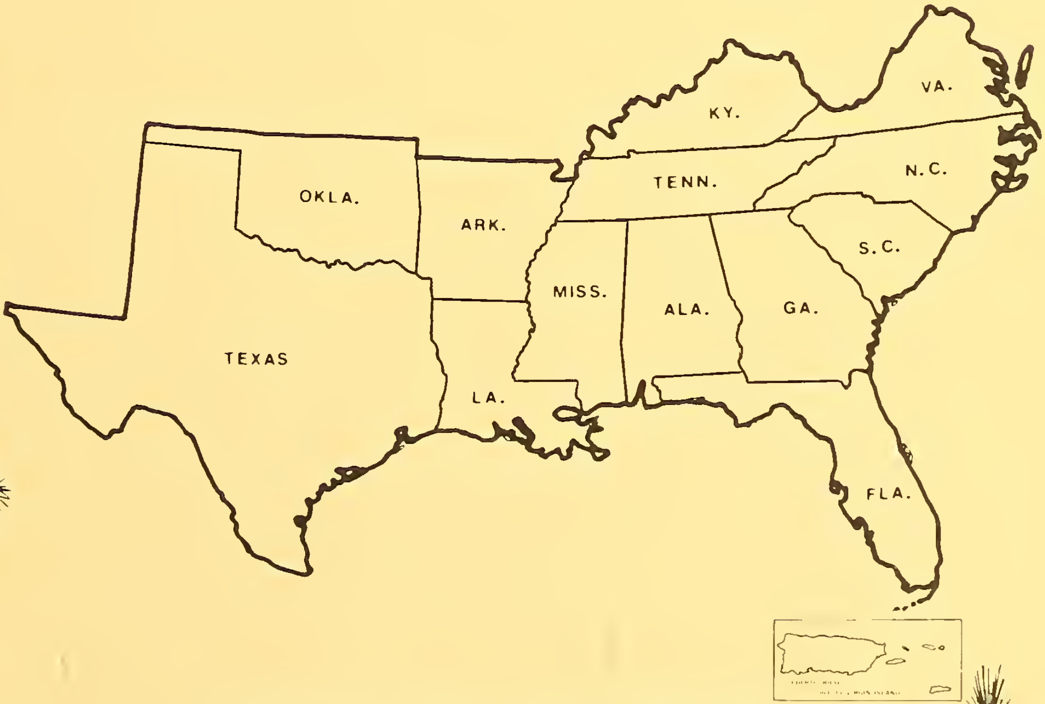


PINE REFORESTATION ACTION PLAN

for Southern Forests:



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SOUTHEASTERN AREA • STATE AND PRIVATE FORESTRY

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PINE REFORESTATION ACTION PLAN FOR SOUTHERN FORESTS

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Forest Service
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SUMMARY

This action plan responds to the directions in the Resources Planning Act (RPA) Program. The plan was prepared by the USDA Forest Service in cooperation with Southern State Foresters.

Seventy-two percent of the United States' forest land is privately owned, primarily in the East. To meet projected demands, timber supplied from nonindustrial private lands must increase from 29 percent of the total United States production in 1976, to 41 percent by 2030. Future increases in timber supplies must come primarily from nonindustrial private forests. Without additional increases above current management trends, the timber demand/supply outlook projects timber prices in the South to rise at an annual real rate of 2.5 percent per year between 1976 and 2030.

At present (and future) prices, timber is (and will be) sold off the nonindustrial private lands. However, less than one-third of the land area is being returned to softwoods. This is a result of various forest investment problems for the landowner.

Research indicates that economic opportunities exist for more intensive management on 168 million acres of commercial timberland in non-Federal ownerships—most of the opportunities are for softwoods in the South.

As new program strategies become available and are proven effective, they can be meshed with ongoing programs to replace or reduce those that are less effective.

The Forest Service, in cooperation with Southern State Foresters and other forestry interests, has defined actions through incentives, information and education, and other means to accelerate pine reforestation in the South.

RPA ASSESSMENT

Of the total United States commercial, forest land acreage of 482 million acres, approximately 347 million acres or 72 percent was in private ownerships in 1977. Much of this area is in productive sites and is close to markets for timber products. These ownerships, consequently, have long been of major importance as a source of timber supplies for the wood-using industries. Fifty-two percent of these forests are in the South, with most of the remainder in the North.

The 1979 RPA Assessment projects significant shifts in softwood sawtimber supplies among owners. The share from nonindustrial, private forest lands is expected to increase from 29 percent of the total in 1976, to 41 percent by 2030. These softwood supply projections also show a doubling of softwood timber harvest in the South.

However, current rates of softwood regeneration fail to sustain the increased harvest called for in the 1979 RPA Assessment. "Since 1965, the rates of pine regeneration in the South have been declining. The rates of hardwood regeneration have been increasing. These changes have not been fully appreciated. They are masked by continued increases in pine volume and in net annual growth of pine that resulted from the increased rates of pine regeneration on retired cropland from 1945 to 1965."[1] On nonindustrial private lands, rates of pine regeneration have been lower since 1965 than they were during the Soil Bank era.

This decline in rates of pine regeneration percent from 1966 to 1978 is shown in figure 1. The figure shows the percentage change in the number of 2- and 4-inch trees as compared with the preceding State inventory. Basically, the figure demonstrates a marked decline in rates of regeneration since the middle 1960's, when cropland retirement essentially ended. Furthermore, these declines are basically on the nonindustrial, private ownerships.

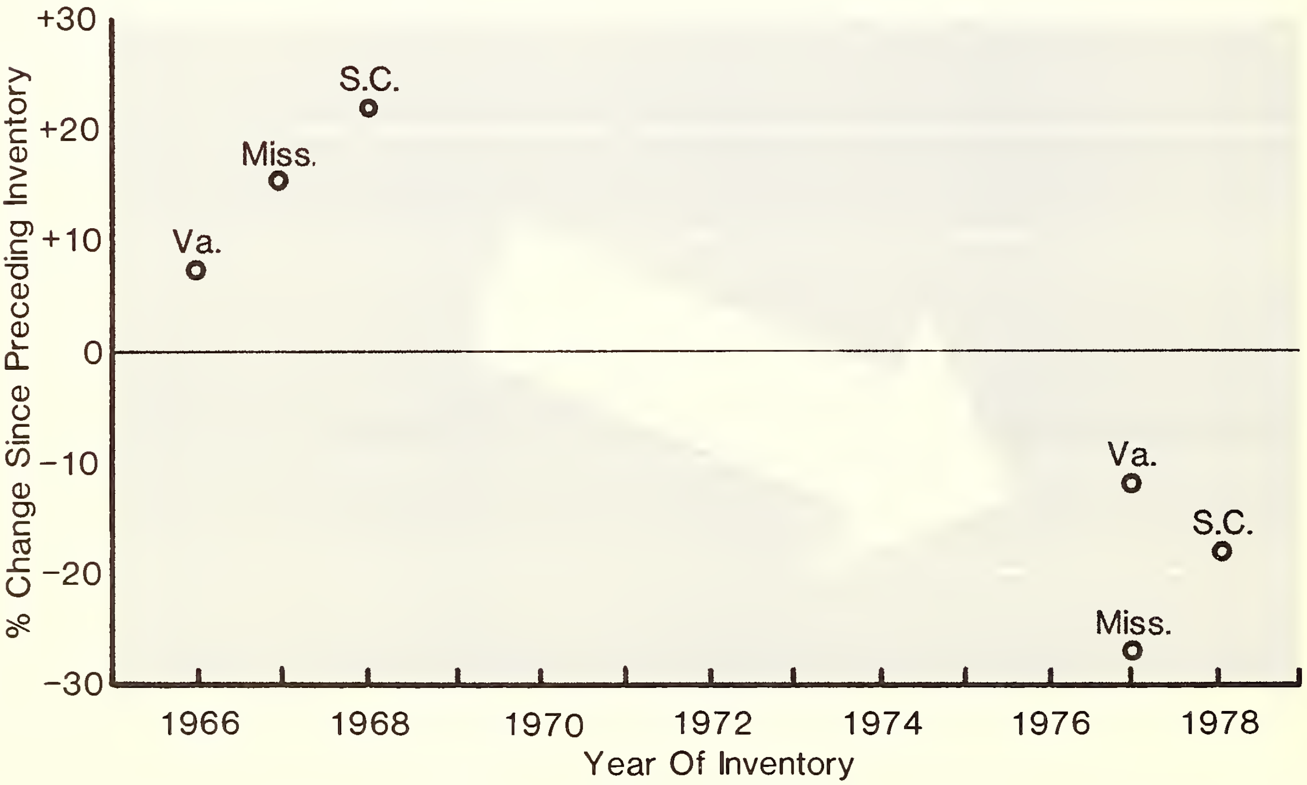

Figure 1.—Percent change in number of softwood trees in 2- and 4-inch diameter classes by States and year of inventory.

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[1] Boyce Stephen G and Herbert A. Knight, 1979 Prospective ingrowth of southern pine beyond 1980. U.S Department of Agriculture, Forest Service. Res. Pap. SE-200 50 p. Southeast. For. Exp. Stn. Asheville, NC.

This regeneration problem was first cited in a Georgia study following a 1972 remeasurement of Forest Survey plots measured in 1961. The study found that, of the large acreage of southern pine harvested between the two surveys, only 11 percent showed any evidence of being replanted to pine. Twenty-one percent of the harvested area naturally regenerated to pine, and the balance—68 percent of the nonindustrial, private pineland harvested—naturally succeeded to hardwoods.

Figure 2 shows annual planting accomplishments on forest industries, public, and nonindustrial, private lands. Since the early 1970's, the regeneration of pine on nonindustrial, private lands has been accomplished primarily through public cost-sharing programs (Agricultural Conservation Program, Forestry Incentives Program, and some State programs). Industry assistance is primarily related to seedling production and "at cost" site preparation and planting assistance. Consulting foresters' efforts, technical assistance from State, extension and industrial foresters, and landowner initiatives also contributed to reforestation work.

Nonindustrial private owners control 63 percent of the area in pine types in the South. These owners, therefore, must provide a substantial portion of the base for current and future pine harvests. Between 1965-77, these owners—in total—showed little inclination to accelerate regeneration on their harvested pinelands.

By 1977, forest industry investments were 2½ times the 1965 rate. This indicated that these industries view site preparation, planting, and hardwood control to establish pine stands as an advantageous corporate investment.

Research conducted in support of the 1979 Assessment also shows that there are many opportunities for profitable investments in forest management. Such investments could substantially increase timber supplies. The study shows that there are economic opportunities for more intensive management on 168 million acres of commercial timberland in non-Federal ownership—

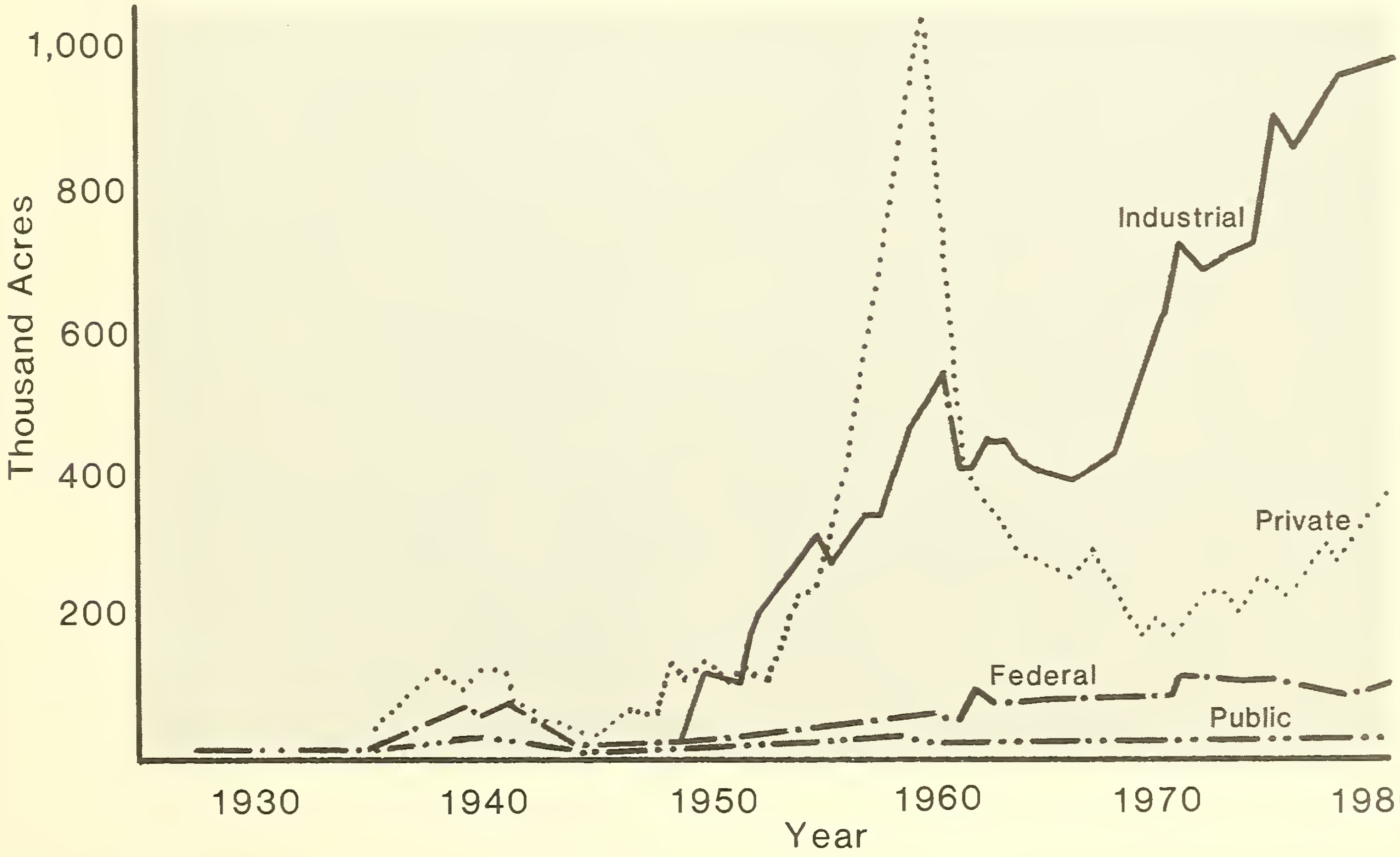

Figure 2.—Tree planting in the South.

some 33 percent of the Nation's total. With treatment of these acres, net annual timber growth could be increased by 12.7 billion cubic feet, a volume roughly equal to three-fifths of the total net annual growth in 1976. Growth at this scale would require several decades of work. The effects of investments in these economic opportunities cannot be realized until trees grow to marketable size. Furthermore, substantial capital, $13.3 billion, over a 10- to 15-year period would be required to do the job on all identified acres. The bulk of the opportunities are for softwoods on nonindustrial private lands.

About three-fourths of the economic opportunities in most areas involve reforestation or conversion of existing stands. This work includes regeneration of nonstocked acres, harvesting mature stands and regenerating the tract, and conversion of existing stands to more desired species. Reforestation and conversion efforts account for about 90 percent of the investment opportunities.

Table 1.—RPA Program: National and Southeastern Area Target for 1985 and 2030.

National Goal	**1985**	**2030**
	...mm acres...	
Reforestation, High Bound	1.2	1.7
Reforestation, Low Bound	1.1	1.5
TSI, High Bound	.7	1.5
TSI, Low Bound	.7	1.2
Southeastern Share		
Reforestation, High Bound	1.1	1.5
Reforestation, Low Bound	.9	1.3
TSI, High Bound	.4	1.0
TSI, Low Bound	.4	.8

RPA RECOMMENDED PROGRAM

The major thrust in State and Private Forestry is the production of wood, while maintaining the quality of the environment. The Recommended Program will provide an increased level of technical assistance and advice to nonindustrial private forest landowners for reforestation, timber stand improvement, and timber harvest. An increased level of technical assistance will also be provided to loggers and processors for improved utilization of wood.

Technical and financial assistance to timber growers will emphasize regeneration following harvest and stand improvement. Special efforts would be made to motivate landowners to replant their land promptly after harvesting and to use genetically improved planting stock. The goal is to boost reforestation from the current 326,000 acres per year to more than 1.2 million acres by 1985, and nearly 1.7 million by 2030 at the High Bound. Low Bound increases would be slightly less: nearly 1.1 million acres by 1985 and nearly 1.5 million by 2030. Increases in acreages receiving cultural treatment would follow a similar pattern: to nearly 750,000 acres by 1985 and 1.5 million acres by 2030 in the High Bound; to nearly 700,000 acres by 1985 and over 1.2 million acres by 2030 in the Low Bound. A majority of these targets are planned for the South (table 1). Meeting these targets will require a coordinated effort of forest industry, consultants and other forestry interests.

Assistance is provided through State forestry agencies with some financing from Federal appropriations. The Forest Service apportions Federal funds to the States and provides general administration and technical support. Most of the funds are provided by the States. State forestry agencies furnish on-the-ground technical advice and assistance to nonindustrial, private forest landowners for reforestation, timber stand improvement, and timber harvest. Nurseries and tree improvement programs are operated by the States to support reforestation efforts. States furnish on-the-ground technical advice and assistance to loggers and processors to increase the efficiency of wood utilization. The amount and type of technical assistance the States provide free of charge is usually limited. Therefore, many are referred to private consultants for assistance.

Financial and technical assistance also helps protect forest resources from fire and develop management strategies to minimize effects of insect and disease attacks on nonindustrial, private lands. Fire protection also includes sharing of State fire-fighting personnel and equipment with the Forest Service and other Federal agencies. Insect and disease programs emphasize integrated pest management strategies and less chemical controls.

As new program strategies such as loans or tax treatments become available and are proven effective, they can be meshed with ongoing programs, replacing or reducing those less effective.

FRAMEWORK FOR ACTION

Three categories of the program are essential to reforestation efforts: (1) cost-share incentives, (2) technical assistance and (3) support activities A carefully selected blend of these categories is essential for an accelerated pine reforestation effort to succeed in the South.

INCENTIVES

Federal and State incentive programs provide landowners with financial assistance for regeneration and timber stand improvement practices. Current levels of funding for incentive programs are oversubscribed. Without such assistance, forest management efforts decline since nonindustrial private forest landowners generally appear unwilling to reinvest proceeds from timber sales for reforestation.

The Forestry Incentives Program (FIP).—This program is administered by the Agricultural Stabilization and Conservation Service (ASCS) with technical assistance provided by the Forest Service and State forestry organizations. The intent of this program is for society to share the cost of tree planting and timber stand improvement in a cost effective manner with nonindustrial private landowners in order to assure future timber supplies. The program accomplishes 190,000 acres of tree planting and 40,000 acres of Timber Stand Improvement (TSI) annually in the South. Current demands in the South for forest incentives cost-sharing funds are double the amounts available. Several other states are investigating the possibility of establishing their own incentive program.

The Agricultural Conservation Program (ACP).—This program, administered by ASCS, is conservation oriented. Tree planting and timber stand improvement practices for conservation often yield side benefits in timber volumes. This program accomplishes about 17,000 acres of tree planting and 23,000 acres of TSI annually in the South.

The State Incentive Programs.—Mississippi, North Carolina and Virginia provide cost-sharing with landowners for reforestation and forest management. These programs regenerate about 18,000 acres annually in each state.

Marketing Information.—Several southern State Cooperative Extensive Service agencies, in cooperation with the USDA Forest Service, sponsor a price reporting service *(Timber Mart South).* The service is a monthly, market report for raw forest products. It gives a range in area-wide prices for sawtimber, pulpwood, firewood and other products including peeler and veneer logs, chips, poles, crossties, fuel residues and dimension lumber. About 950 county agents and service foresters throughout the South receive and disseminate this information.

TECHNICAL ASSISTANCE

There are more than 2 million nonindustrial, private forest landowners in the South. One-on-one landowner contact with a forester is a key ingredient for placing lands under management. In 1979, State service foresters prepared 26,000 management plans for 2,238,000 acres. Additional assistance is available through industrial conservation foresters, consulting foresters, and other public agencies. At present, there is a ratio of one full- or part-time forester to 1,300 of these landowners, or about one forester to 95,000 acres. See table 2.

Table 2.—Approximate number of professional foresters available to aid nonindustrial, private, forest landowners in the South.

	Full-Time	Part-Time
State CFM Foresters	280	260
Consulting Foresters[1]	400	-
Industrial Conservation Foresters	150	350
Extension Service Foresters	80	-
Soil Conservation Service Foresters	15	-
SA-S&PF Y-LT Foresters[2]	12	-
Total	937	610

[1] An unknown number of the consultant foresters work part-time in other occupations.

[2] Limited to Yazoo-Little Tallahatchie Flood Control Project in northern Mississippi.

About 75 forest industries have leases or landowner assistance agreements on more than 3 million acres of forestland owned by nonindustrial private, forest landowners. Industry has conducted a successful Tree Farm Program in the South, with over 20,000 farms on nearly 50 million acres. Industry assistance has increased in recent years and this trend should continue as timber and pulpwood demands accelerate.

Despite efforts of the States, industry and consultants, surveys shows that only a small percentage of nonindustrial, private landowners have received assistance from a professional forester. All forestland owners need technical assistance in planning and implementing their management programs.

There are environmental trade-offs in air and water quality, and resource management activities. Landowners today are increasingly aware of the advantages of the multiple uses of forests. They need advice on a wide range of soil, water, wildlife, range, and timber management techniques. Proper prescriptions to meet silvicultural and other resource needs could result in better multiple-use management of the South's pine lands. This technical assistance is particularly crucial in implementing natural regeneration systems.

Speedier adoption of improved techniques and research findings is essential for maximum gains. The development of demonstration forest areas on research forests, national forests, State forests, and other public and private lands will serve as focal points for training foresters and keeping current in silvicultural practices.

SUPPORT ACTIVITIES

1. Nursery and Tree Improvement.—Seed must be available for nursery production, and nurseries must be able to produce quantities of quality seedlings to meet reforestation needs. Southeastern state nurseries produce about 600 million seedlings, annually. Most of these nurseries are near maximum capacity, which does not allow for the soil rotation and management necessary to continually produce quality seedlings. Forest industries are constructing eight new nurseries in the South. This will relieve some of the demand from State nurseries, but not enough to permit use of the best nursery management regimes.

Industry contracts account for 44 percent of state nursery production, other industry and government sales call for 16 percent, leaving 40 percent of the State's production for nonindustrial private forest use. About 43 percent of the seedlings produced in the South are from genetically improved seeds.

New seed orchards, improved cone and seed collection systems, upgraded seed extraction, as well as cleaning and storage facilities are needed to assure adequate supplies of improved seed for pine reforestation to meet future demands. Future efforts will require better screening for resistance to fusiform rust and other diseases.

2. Protection.—Between 1974-78, 5,832,810 acres of southern forestland burned. Resource losses due to wildfires may limit the potential for increasing softwood yields in the South. Prescribed burning is an inexpensive means of site preparation and vegetation control. Prescribed burning for fuel reduction and management is needed to decrease the intensity of fires should they occur. Smoke management to minimize air pollution will become more important as prescribed burning increases.

Insects and diseases cause loses of 3 billion cubic feet of timber annually in the South. Root rot in the nursery, cone insects in seed orchards, fusiform rust on loblolly and slash pine seedlings, annosus root rot in thinned stands, and losses to southern pine beetles in older stands are some of the problems needing solutions. More entomologists and pathologists are needed in the field to demonstrate the use of soil fumigants and mycorrhizae, methods for increasing seed orchard production, and silvicultural techniques for reducing mortality.

3. Research.—There is a need to further explore the economic, social and environmental implications of a future in which the demands for nearly all forest production are increasing more rapidly than supplies. Research is needed to determine the best ways to integrate and balance multiple uses of forest resources and reduce the conflicts which are likely to result from rapidly expanding demands.

Some other research needs include more frequent forest surveys to detect trends in regeneration efforts and research on use and cost effectiveness of natural regeneration systems. Research on seed processing, seedling handling and storage, low cost site preparation methods, including herbicide use, growth and yield data for certain areas, yield of understocked stands, all-aged management on small holdings would all benefit an accelerated reforestation effort.

Working through the Southern Equipment Development Program, the evaluation, and if necessary, development of equipment for nursery tree improvement and silviculture, and fire protection activities will assist in improving quality and efficiency in the production of planting stock, regeneration operations, stand improvement and protection.

4. Southern Pine Reforestation Actions.—The Forest Service actions proposed through fiscal year 1985 are the result of the RPA Program. The intent is to reforest millions of acres of nonindustrial private forest lands defined in RPA through cooperative efforts with State forestry organizations, forest industry, and other forestry interests.

Fiscal year 1981 is the initial increment of the 1980 RPA Program. The President's 1981 budget includes funds for an expanded State and Private Forestry pine reforestation program in the South. Future funding will be consistent with the President's policy statements which weigh forestry priorities with National commitments to other programs, goals, and objectives.

An annual review procedure will be developed to monitor progress toward reforestation goals. Acres placed under management and acres regenerated will be the bottom line for the evaluation. Other critical factors such as nursery and seed orchard production, vendor availability, education and information activities, technical services, and marketing assistance will be included in the evaluation.

The State Forester will serve as the focal point for developing and implementing the evaluation process in the State. Existing State coordination mechanisms will be used to the extent possible. The Forest Service will cooperate with the States on their reviews. Annual achievements and trends will be summarized by the Southeastern Area in an annual report forwarded to the Chief, Forest Service.

FOREST SERVICE ACTIONS

Action	Responsible Unit[1]	Projected completion date
1. Provide protection that will ensure appropriate pine timber survival on nonindustrial, private forest lands. **Tasks:**		
a. Initiate fire economic analysis systems capable of measuring tolerance loss limits in young 1- to 10-year-old plantations.	SA	6/81
b. Establish fire damage objectives in 1- to 10-year-old plantations.	SA	6/81
c. Complete State fire plans that include protection needed for 1- to 10-year-old plantations.	SA	3/yr. included in State fire plans
d. Promote the development of prescribed burning workshops and provide special training in prescribed burning for site preparation and fuel reduction for 1- to 10-year-old plantations.	SA	2 per year
Implement methodology for evaluating population fluctuations of seed and cone insects in pine seed orchard.	SA	continuing
e. Increase capabilities to evaluate pine progeny resistance to diseases.	SA	continuing
f. Implement procedures to survey and evaluate losses caused by seedborne insects and pathogens.	SA	continuing
g. Implement procedures to evaluate insect and diseases losses associated with outplanting and establishment of new plantations.	SA	continuing

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[1] Forest Service Units:
WO—Washington Office
SA—Southeastern Area
SEFES—Southeastern Forest Experiment Station
SOFES—Southern Forest Experiment Station

Action	Responsible Unit	Projected completion date
h. Develop plan to facilitate early recognition and response to new insect and disease problems associated with pine plantations.	SA	continuing
i. Promote use of new technology in integrated pest management in forest tree nurseries, i.e., mycorrhizae.	SA	continuing
j. Develop integrated pest management training sessions for seed orchard and nursery managers.	SA	3/82
2. Create an economic climate which will motivate landowners to reforest their lands.		
Tasks:		
a. Participate in the development and review of national loans and legislation to assure that forestry interests are appropriately represented.	WO	continuing
b. Maintain and provide current information to States on Federal and State tax legislative proposals.	SA	Initial compilation completed by 1/81 then continually update.
c. Provide technical and financial assistance and training in "Multi-County Development Planning for Forest Products Industry" to identify forestry opportunities which enhance economics and social benefits in depressed areas.	SA	
d. Provide financial and technical assistance to States to prepare individual State economic analyses which describe the importance of their forest resources.	SA	2 States-6/81 5 States-6/82 6 States-6/83
e. Provide financial and technical assistance in the preparation of a State Forest Resource Plan which integrates issues and alternatives related to reforestation.	SA	10/83
f. Provide Federal taxation and forest finance training.	SA	4 States per year
g. Assist States to develop State Forestry Incentives Program.	SA	continuing

Action	Responsible Unit	Projected completion date
h. Participate in ASCS State Planning Committee meetings to demonstrate the importance of pine reforestation. Emphasize pine reforestation through FIP, ACP, and special projects.	SA	13 States per year
3. Coordinate and maintain a nursery and tree improvement program. **Tasks:**		
a. Identify actual and projected seed and seedling production levels by States from industry, State, and Federal facilities.	SA	continuing
b. Facilitate regional transfer of seed and planting stock to assure that prepared sites are reforested.	SA	continuing
4. Increase emphasis on the use of natural regeneration systems. **Tasks:**		
a. Recommend, where appropriate, the consideration of natural regeneration techniques in forest management plans and monitor them through FIP reviews and the accomplishment sampling process.	SA	continuing
b. Urge southern universities to strengthen natural regeneration emphasis in forestry curriculums.	SA	Contact—10/81 Follow-up—3/81 Dean's tour—6/81
c. Promote field tours that demonstrate natural regeneration techniques.	SA	continuing
5. Implement an Information and Education effort. **Tasks:**		
a. Activate the Southern States Pine Reforestation Information and Education Plan.	SA	10/80
b. Inventory and publicize existing forestry demonstration areas that highlight the principles of forest resource management.	SA	12/80
c. Help develop new demonstration forests that highlight the principles of pine management.	SA	10/82

Action	Responsible Unit	Projected completion date
d. Promote the organization of workshops that emphasize natural and artifical regeneration systems, and the cost effectiveness of the practices, in cooperation with universities, Extension Service, industry, forestry research organizations, and State forestry agencies.	SA	continuing
e. Publish and promote articles that emphasize the multiple-use aspects of natural and artifical regeneration systems.	SA	continuing
6. Strengthen resource considerations through forest land management plans by providing technical and financial assistance and coordinating workshops.	SA	2 workshops, 1981 3 workshops, 1982 3 workshops, per year, 1983-85
Tasks:		
a. Identify soil productivity and resource potential/actual losses due to the intensity of forestry practices and present options for reducing these losses.		
b. Present the principles of integrated pest management.		
c. Incorporate wildlife recreation and range management techniques that present the social and economic advantages derived from these resources in pine reforestation and management systems.		
d. Integrate the principles of fire planning and smoke management into all forest management procedures.		
7. Negotiate public and private reforestation goals.		
Tasks:		
a. Work with Federal agencies and national organizations.	SA	continuing
b. Work with regional organizations, and State forestry agencies.	SA	continuing
8. Use and strengthen the RPA Assessment and Program.		
Tasks:		
a. Conduct studies of the reasons why non-industrial, private forest landowners do not regenerate their lands.	WO	10/83

Action	Responsible Unit	Projected completion date
b. Analyze the impact and effectiveness of the budget increases or decreases each year.	SA	annually
c. Analyze the regional trends in stumpage prices relative to timber supply and milling facilities.	SA	annually
d. Prepare alternatives for forest surveys at 5-year intervals to provide better reforestation trends.	SA SEFES SOFES	3/81
e. Map prime timberlands to identify the most productive and cost effective areas for resource expenditures.	SA	continuing
f. Present a unified Federal/State reforestation program for the South and inform appropriate authorities of the resource needs and cost effectiveness of this program.	SA	annually, through the budget procedures
g. Jointly establish reforestation targets with States and track accomplishments to assure program concurrence and cost effectiveness.	SA	annually
h. Develop and implement a cooperative evaluation procedure that identifies private and public accomplishments toward meeting reforestation goals.	SA	10/81
i. Implement a series of cooperative projects through financial and technical assistance designed to strengthen delivery systems and address common regeneration problems, such as vendor services or FIP backlog.	SA	Implement two projects by 10/80 six additional projects by 10/81
j. Expand successful pilot projects statewide or regionwide.	SA	10/81
k. Jointly establish fire damage (acres burned) objectives in 1- to 10-year-old plantations.	SA	6/81
l. Develop a pine reforestation action plan for Puerto Rico.	SA	9/81